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L9: Entry 3 of 54

File: USPT

Aug 28, 2001

DOCUMENT-IDENTIFIER: US 6281297 B1

TITLE: Isobutylene rubber particles, graft copolymer particles and resin composition containing the same

Detailed Description Text (18):

The graft efficiency of the obtained graft copolymer (S-1) was determined by measuring the gel fraction of the obtained crosslinked graft copolymer in the same manner as the measurement of the gel fraction of the crosslinked rubber particles in Example 1, and calculating the percentage of the amount of increase of the toluene-insoluble portion based on the graft polymerization with respect to the amount of the vinyl monomer used for the graft polymerization (sum of methyl methacrylate and n-butyl acrylate).

Detailed Description Text (43):

A separable flask equipped with a condenser, a nitrogen feeding tube, a dropping funnel and a stirrer was charged with 80 parts (solid basis) of the obtained latex of the polyorganosiloxane rubber particles and then with 260 parts of water, 0.001 part of ferrous sulfate, 0.004 part of disodium ethylenediaminetetraacetate and 0.1 part of formaldehyde sodium sulfoxylate. The mixture was heated to 70.degree. C. with stirring at 250 r.p.m. in a nitrogen stream. Subsequently, 18 parts of methyl methacrylate, 2 parts of n-butyl acrylate and 0.04 part of cumene hydroperoxide were put in the dropping funnel, and added dropwise to the latex over 2 hours, followed by stirring at 70.degree. C. for 1 hour to give an aqueous latex of organosiloxane-based graft copolymer particles. The conversion of graft polymerization was 99%. Also, the average particle size of the graft copolymer particles was 0.30 .mu.m and the graft efficiency was 95%.

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L9: Entry 4 of 54

File: USPT

Mar 13, 2001

DOCUMENT-IDENTIFIER: US 6201064 B1

TITLE: Crosslinked rubber particles, graft copolymer particles and thermoplastic resin composition

Detailed Description Text (6):

Subsequently, 18.0 parts of methyl methacrylate, 2.0 parts of n-butyl acrylate and 0.04 part of cumene hydroperoxide were put in the dropping funnel, and added dropwise to the rubber latex over 2 hours, followed by stirring at 70.degree. C. for 2 hours. The conversion was 98%. The obtained latex of crosslinked rubber-based graft copolymer particles was coagulated by salting out, and the resulting particles were separated, washed and dried at 40.degree. C. for 15 hours to give a powder of crosslinked rubber-based graft copolymer. The obtained crosslinked rubber-based graft copolymer particles (S-1) had a graft efficiency of 95% and an average particle size of 0.3 .mu.m.

Detailed Description Text (19):

Subsequently, 18.0 parts of methyl methacrylate, 2.0 parts of n-butyl acrylate and 0.04 part of cumene hydroperoxide were put in the dropping funnel, and added dropwise to the rubber latex over 2 hours, followed by stirring at 70.degree. C. for 2 hours. The conversion was 98%. The obtained latex of crosslinked rubber-based graft copolymer particles was coagulated by salting out, and the resulting particles were separated, washed and dried at 40.degree. C. for 15 hours to give a powder of crosslinked rubber-based graft copolymer. The obtained crosslinked rubber-based graft copolymer particles (S-5) had a graft efficiency of 95% and an average particle size of 0.25 .mu.m.

Detailed Description Text (28):

Subsequently, 18.0 parts of methyl methacrylate, 2.0 parts of n-butyl acrylate and 0.04 part of cumene hydroperoxide were put in the dropping funnel, and added dropwise to the crosslinked rubber latex over 2 hours, followed by stirring at 70.degree. C. for 2 hours. The conversion was 98%. The obtained graft copolymer latex was coagulated by salting out, and the resulting particles were separated, washed and dried at 40.degree. C. for 15 hours to give a powder of crosslinked rubber-based graft copolymer. The obtained crosslinked rubber-based graft copolymer particles (S-7) had a graft efficiency of 95% and an average particle size of 0.25 .mu.m.

Detailed Description Text (33):

Subsequently, 18.0 parts of methyl methacrylate, 2.0 parts of n-butyl acrylate and 0.04 part of cumene hydroperoxide were put in the dropping funnel, and added dropwise to the rubber latex over 2 hours, followed by stirring at 70.degree. C. for 2 hours. The conversion was 98%. The obtained latex of graft copolymer particles was coagulated by salting out, and the resulting particles were separated, washed and dried at 40.degree. C. for 15 hours to give a powder of crosslinked rubber-based graft copolymer. The obtained crosslinked rubber-based graft copolymer particles (S-8) had a graft efficiency of 98% and an average particle size of 0.25 .mu.m.

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L9: Entry 9 of 54

File: USPT

Nov 10, 1998

DOCUMENT-IDENTIFIER: US 5834563 A

TITLE: Composite rubber particles and graft copolymer particles of composite rubber

Detailed Description Text (4):

Subsequently, 30 parts of methyl methacrylate as the vinyl monomer for graft polymerization and 0.06 part of cumene hydroperoxide as the radical polymerization initiator were put in the dropping funnel, and added dropwise to the composite rubber latex over two hours, followed by stirring at 70.degree. C. for one hour. The conversion was 99%. To the obtained graft copolymer latex of composite rubber was added dropwise 30 parts of an aqueous solution of 10% calcium chloride, followed by solidifying, separating, washing and then drying at 40.degree. C. for 15 hours to give a powder of graft copolymer particles of composite rubber (hereinafter referred to as "S-1"). A graft efficiency and average particle size of the obtained S-1 are shown in Table 1.

Detailed Description Text (11):

Subsequently, 30 parts of methyl methacrylate as the vinyl monomer for graft polymerization and 0.06 part of cumene hydroperoxide as the radical polymerization initiator were put in the dropping funnel, and added dropwise to the composite rubber latex over two hours, followed by stirring at 70.degree. C. for one hour. The conversion was 99%. To the obtained graft copolymer latex of composite rubber was added dropwise 30 parts of an aqueous solution of 10% calcium chloride, followed by solidifying, separating, washing and then drying at 40.degree. C. for 15 hours to give a powder of graft copolymer particles of composite rubber (hereinafter referred to as "S-3"). A graft efficiency and average particle size of the obtained S-3 are shown in Table 1.

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L9: Entry 10 of 54

File: USPT

Oct 7, 1997

DOCUMENT-IDENTIFIER: US 5674930 A
TITLE: Thermoplastic resin compositions

Detailed Description Text (84):

The hydroxyl group containing styrene copolymer showed a graft efficiency of 75%. The term "graft efficiency" used herein means the proportion of the styrene grafted to the ethylene-propylene copolymer rubber of the total amount of the raw material styrene, which can be calculated as follows:

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L9: Entry 17 of 54

File: USPT

Feb 23, 1993

DOCUMENT-IDENTIFIER: US 5189108 A

TITLE: Modified polymer rubber and process for preparing the same

Detailed Description Text (3):

Then, 20 parts by weight of styrene monomer and 1.0 part by weight of Sanperox.RTM. TO (a registered trade name, mfg. by Sanken Kako Inc.) as a free radical initiator were added thereto. The resulting mixture was brought up to 110.degree. C. over a period of 80 minutes, and then the reaction was continued for 1 hour. After cooling, the styrene-graft copolymer rubber was collected by filtration, washed thoroughly with pure water and then dried under vacuum. The analysis of the graft copolymer obtained in the step (1) revealed that the amount of grafted polystyrene was 16 parts by weight and the amount of non-grafted polystyrene extracted was 3.6 parts by weight, per 20 parts by weight of the added styrene monomer, and the calculated graft efficiency was 82%.

Detailed Description Text (4):

Then, the reaction of the step (2) was carried out by mixing 100 parts by weight of the styrene-graft copolymer rubber obtained above with 0.08 part by weight of 1,1-bis(t-butylperoxy)-3,3,5-trimethylcyclohexane on a mixing roll, and then kneading the mixture with 5 parts by weight of maleic anhydride in a twin-screw extruder set at 250.degree. C. The analysis of the modified copolymer rubber obtained showed that the amount of maleic anhydride in the resulting modified copolymer rubber was 3.2% by weight (3.8 parts by weight based on the original EPDM), the amount of maleic anhydride added to the modified copolymer rubber was 2.1% by weight (2.5 parts by weight based on the original EPDM), and the graft efficiency was 66%. Further, the modified copolymer was dissolved in tetrahydrofuran at 60.degree. C. and filtered through a 120-mesh SUS screen. Resultantly, the amount of gel-like insolubles collected by filtration showed a value of 0.23% in the modified polymer rubber. The value was considered to be satisfactorily low.

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L9: Entry 23 of 54

File: USPT

Feb 18, 1992

DOCUMENT-IDENTIFIER: US 5089557 A

TITLE: Rubber modified blend of nylon and styrene/acrylonitrile maleic anhydride terpolymer

Detailed Description Text (4):

Vinylaromatic monomers used for the graft copolymer of component A include styrene, and substituted styrenes such as alpha-methylstyrene, chlorostyrene, bromostyrene, p-methyl styrene, and vinyl toluene. A preferred vinylaromatic monomer is styrene. The grafted hard phase may optionally include additional monomers such as methylmethacrylate or N-phenylmaleimide in amounts up to about 10 percent by total graft monomer weight if desired. Advantageously, graft polymerization conditions are selected to provide a graft efficiency of at least 20 weight percent and preferably at least 40 weight percent of the total graft and matrix polymer present in the graft rubber composition. Typically the vinylaromatic/acrylonitrile grafted rubber component contains from 30 to 80 weight percent rubber. The particle size of the vinylaromatic/acrylonitrile grafted rubber is advantageously in the range of 0.05 to 2.0 microns, preferably 0.1 to 0.5 microns. The amount of component A present in the blends of the present invention is preferably from 10 to 50 weight percent.

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L11: Entry 8 of 25

File: USPT

Feb 23, 1993

DOCUMENT-IDENTIFIER: US 5189108 A

TITLE: Modified polymer rubber and process for preparing the same

Brief Summary Text (17):

Previously, the present invention studied for obtaining an ethylene-.alpha.-olefin copolymer rubber modified with an unsaturated dicarboxylic acid anhydride which is excellent in processability and storage stability. They also studied on the process for preparing the same by which a larger amount of unsaturated dicarboxylic acid anhydride added to the rubber, forming a smaller amount of gel and suppressing an extreme increase in Mooney viscosity (ML.sub.1+4 121.degree. C.) as compared with the prior art processes. As a result, they found that a modified polymer rubber obtained by kneading an ethylene-.alpha.-olefin copolymer rubber with a free radical initiator, an aromatic vinyl monomer and an unsaturated dicarboxylic acid anhydride, as compared with those obtained without using an aromatic vinyl monomer, had a larger amount of unsaturated dicarboxylic acid anhydride added thereto and the anhydride moiety was oxidized to the carboxylic acid structure by moisture in a far less degree. The thus obtained modified rubber has no marked increase in Mooney viscosity, so that it shows a good processability. Based on the finding, they applied for a patent (JP-A-64-45413). However, although this process surely gives a modified copolymer having a high content of unsaturated dicarboxylic acid anhydride added thereto and forms little of gel-like substances, it requires the use of a starting rubber having a nonconjugated diene content of not higher than 3% by weight. This is clearly started in the specification of said application. Thus, when the process of said application is applied to EPDM containing more than 3% by weight of nonconjugated diene, a significant formation of gel-like substance results. Accordingly, an improvement in suppressing the gel formation has been desired. Further, according to the process, the amount of the aromatic vinyl monomer in the graft copolymer is limited to less than about 5% by weight. This is because in order to increase the grafted amount of the aromatic vinyl compound by the process, it is necessary to greatly increase the amount of the monomer used in the kneading-grafting reaction, but, when a large amount of these monomers, which are liquid or gas under the reaction conditions, is used, the reaction system assumes the form of liquid or foam, which results in poor kneading efficiency and leads to difficulty in reaction control. Therefore, it had to be admitted that according to the process, it was difficult from the practical point of view to increase the grafted amount of the aromatic vinyl monomer over about 5% by weight.

Brief Summary Text (19):

For example, another application assigned to the present assignee (JP-B-62-10565) discloses a process which comprises grafting styrene, acrylonitrile, etc. to a shredded rubbery polymer in an aqueous suspension in a high graft efficiency. This process also has such disadvantages that when the process is applied to the grafting of unsaturated carboxylic acid derivatives etc., the conversion in the graft reaction is very low and, if a large amount of free-radical initiator is used to promote the graft reaction, gels are formed and makes it impossible to process the modified copolymer in practice.

Brief Summary Text (38):

Specific examples of the rubbery polymers (A) usable in the present invention are rubbers such as ethylene-.alpha.-olefin copolymer rubber, ethylene-.alpha.-olefin-non-conjugated diene copolymer rubber, styrene-butadiene copolymer rubber, polybutadiene rubber, polyisoprene rubber, natural rubber, acrylonitrile-butadiene copolymer rubber, ethylene-vinyl acetate copolymer rubber, acrylic rubber, and ethylene-acrylic ester copolymer rubber.

Brief Summary Text (39):

Of these, preferable are ethylene-.alpha.-olefin copolymer rubber and

ethylene-.alpha.-olefin-nonconjugated diene copolymer rubber because they form less amount of gel in the step (2) described later and give a higher graft efficiency (namely, the proportion of the monomers actually added to the rubber in the fed monomers) in the step (1) and the step (2).

Brief Summary Text (45):

The aromatic vinyl monomer (B) used in the present invention is preferably styrene, but may also be o-methylstyrene, p-methylstyrene, m-methylstyrene, .alpha.-methylstyrene or the like. They may be used also as a mixture thereof.

Brief Summary Text (46):

In the step (1) of the present invention, a non-aromatic vinyl monomer (C) may be used together with the aromatic vinyl monomer (B). Specific examples of such non-aromatic vinyl monomer (C) are unsaturated nitriles such as acrylonitrile and methacrylonitrile; unsaturated carboxylic acids such as acrylic acid and methacrylic acid; alkyl esters of acrylic or methacrylic acid such as methyl acrylate and methyl methacrylate; vinyl chloride, etc., used each alone or in admixture of two or more thereof. Particularly, acrylonitrile and methyl acrylate are preferably used from the viewpoint of reactivity in copolymerization with the aromatic vinyl monomer (B).

Brief Summary Text (48):

The polymerizable monomer (D) used in the step (2) of the process of the present invention described later is selected from the group consisting of unsaturated dicarboxylic acid anhydrides, unsaturated monocarboxylic acid esters, unsaturated carboxylic acid amides, unsaturated ethers, and the derivatives thereof. Specific examples of the monomers included in the group are maleic anhydride, fumaric anhydride, citraconic anhydride, chloromaleic anhydride, maleimide, N-aromatic maleimide, N-aliphatic maleimide, acrylamide, methacrylamide, N-methylolacrylamide, itaconic anhydride, methyl acrylate, ethyl acrylate, butyl acrylate, methyl methacrylate, ethyl methacrylate, butyl methacrylate, maleic hydrazide, reaction products of maleic anhydride with diamines, himic anhydride (bicyclo [2,2,1]hepta-5-en-2,3-dicarboxylic acid anhydride), dimethylaminopropylacrylamide, 7-amino-3,7-dimethyloctyl acrylate, methyl 2-cyanoacrylate, tetrahydrofulfuryl acrylate, glycidyl acrylate, glycidyl methacrylate, allyl glycidyl ether, himic anhydride chloride, etc. Further, citric acid, which is a saturated carboxylic acid and is generally not included in unsaturated carboxylic acids, is, in the reaction of the step (2) of the present invention, converted into itaconic anhydride as the result of dehydration and decarboxylation caused by heating during the reaction, and hence can be used as a sort of unsaturated carboxylic acid derivatives in the present invention.

Brief Summary Text (53):

The step (1) is a step of graft - polymerizing to a shredded rubbery polymer (A) in an aqueous suspension at a temperature of 30.degree.-130.degree. C. at least one grafting monomer (E) selected from the group consisting of aromatic vinyl monomers (B) and vinyl monomers (F) consisting of at least one aromatic vinyl monomer (B) and at least one non-aromatic vinyl monomer (C). The rubbery polymer (A) of the starting material is shredded with a cutter, grinding machine or such and then fed to a reactor. The granule size of the shredded rubbery polymer (A) is not particularly limited, but is preferably not more than about 3 mm from the viewpoint of enhancing the contact efficiency with the monomers to be added and preferably not less than about 1 mm from the viewpoint of easiness of recovery operations after the reaction. The proportion of the grafting monomer (E) to the rubbery polymer (A) used varies according to the kinds of the monomers used and the properties required for the objective modified polymer rubber. In general, the total amount of the grafting monomer (B) is 1-900 parts by weight relative to 100 parts by weight of the rubbery polymer (A). Particularly when ethylene-.alpha.-olefin copolymer rubber or ethylene-.alpha.-olefin-non-conjugated diene copolymer rubber is used with the grafting monomer (E), the total amount of the grafting monomer (E) is preferably in the range of 5-100 parts by weight per 100 parts by weight of the rubbery polymer. When the amount of the grafting monomer (E) used is less than 5 parts by weight, the amount of the grafting monomer (E) added to the rubbery polymer (A) decreases, which result in the reduction of the modification effect, that is, the reduction of the compatibilizing capability of the modified polymer in use as a compatibilizer for various resins, aimed at by the present invention. When the amount exceeds 100 parts by weight, there may be caused such undesirable results that in the reaction of the step (1), the rubbery polymer granules are swollen by the monomers, increase their tackiness to stick to one another and making their handling difficult, or the homopolymer of the aromatic vinyl monomer (B) is produced in a remarkably large yield lowers the graft efficiency and results in the deterioration of the capability as a compatibilizer.

Brief Summary Text (59):

An advantage of the process of the present invention is that in the reaction of step (1), a graft copolymer is obtained with a high graft efficiency of the grafting monomer (E) and, by using the graft copolymer in the reaction of the step (2), a modified copolymer rubber having a high content of the polymerizable monomer (D), e.g. unsaturated dicarboxylic acid anhydride, is obtained without gel formation. The graft copolymer obtained in the step (1) is preferably separated and recovered from the aqueous medium by such means as decantation or filtration, and then the water adhering to the graft copolymer which is in the form of granules or crumbs is removed by such means as centrifugal dehydration or hot-air drying. In this case, the amount of water remaining in the graft copolymer is preferably reduced to 10 parts by weight or less, more preferably 5 parts by weight or less, from the viewpoint of preventing the inhibition of the reaction in the step (2) and preventing foaming during kneading in the step (2).

Brief Summary Text (63):

Though the kinds of the polymerizable monomer (D) used in the step (2) have already been described above, a radical-polymerizable monomer other than the polymerizable monomer (D) may also be used together with the polymerizable monomer (D) in said step. Specific examples of such radical-polymerizable monomers are unsaturated nitriles (e.g. acrylonitrile and methacrylonitrile), and unsaturated carboxylic acids (e.g. acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid and crotonic acid). They can be used each alone or as a mixture of two or more thereof. In some cases, depending on the kinds of properties and their levels required for the modified copolymer rubber, it is also possible to use the aromatic vinyl monomer (B) in the step (2) with the polymerizable monomer (D).

Brief Summary Text (72):

In feeding the respective components described above to the kneader, it is possible to feed them each separately. It is also possible to uniformly mix a part or whole of the components and feed the mixture. An adoptable method comprises, for example, incorporating the rubber component with the free radical initiator to obtain a mixture, feeding the polymerizable monomer (D) with the mixture into a kneader simultaneously, and kneading the components fed. Another usable method comprises feeding the free radical initiator and/or the polymerizable monomer (D) from a certain opening in the midway of the extruder in order to effect the modification reaction. It is also possible to add, into the reactor of the step (1) or into the extruder of the step (2) through the inlet, as occasion demands, plastics such as polyethylene, nylon, polyester, ABS and polyphenylene ether, and elastomers such as styrenebutadiene block copolymer, styrene-isoprene block copolymer, and the hydrogenation products thereof, whereby comodification of two or more kinds of polymers can be effected.

Brief Summary Text (83):

The amount of styrene added to the graft copolymer obtained in the step (1) was determined from the intensity of the peak corresponding to a substituted benzene ring which appeared in the infrared absorption spectrum. The amount of maleic anhydride added to the modified copolymer rubber obtained in the step (2) was determined by dissolving the extrudate sample in a small amount of toluene, precipitating it with anhydrous acetone, dissolving the sample thus purified again in toluene, and titrating the resulting solution with a KOH ethanol solution at an elevated temperature (85.degree. C.) using phenolphthalen as an indicator.

Brief Summary Text (84):

The amount of styrene added, when styrene was used as the polymerizable monomer (C) of the step (2), was determined from the intensity of the peak corresponding to a substituted benzene ring which appeared in the infrared absorption spectrum of the sample purified as described above.

Detailed Description Text (3):

Then, 20 parts by weight of styrene monomer and 1.0 part by weight of Sanperox.RTM. TO (a registered trade name, mfg. by Sanken Kako Inc.) as a free radical initiator were added thereto. The resulting mixture was brought up to 110.degree. C. over a period of 80 minutes, and then the reaction was continued for 1 hour. After cooling, the styrene-graft copolymer rubber was collected by filtration, washed thoroughly with pure water and then dried under vacuum. The analysis of the graft copolymer obtained in the step (1) revealed that the amount of grafted polystyrene was 16 parts by weight and the amount of non-grafted polystyrene extracted was 3.6 parts by weight, per 20 parts by weight of the added styrene monomer, and the calculated graft efficiency was 82%.

Detailed Description Text (4):

Then, the reaction of the step (2) was carried out by mixing 100 parts by weight of the styrene-graft copolymer rubber obtained above with 0.08 part by weight of 1,1-bis(t-butylperoxy)-3,3,5-trimethylcyclohexane on a mixing roll, and then kneading the mixture with 5 parts by weight of maleic anhydride in a twin-screw extruder set at 250.degree. C. The analysis of the modified copolymer rubber obtained showed that the amount of maleic anhydride in the resulting modified copolymer rubber was 3.2% by weight (3.8 parts by weight based on the original EPDM), the amount of maleic anhydride added to the modified copolymer rubber was 2.1% by weight (2.5 parts by weight based on the original EPDM), and the graft efficiency was 66%. Further, the modified copolymer was dissolved in tetrahydrofuran at 60.degree. C. and filtered through a 120-mesh SUS screen. Resultantly, the amount of gel-like insolubles collected by filtration showed a value of 0.23% in the modified polymer rubber. The value was considered to be satisfactorily low.

Detailed Description Paragraph Table (1):

TABLE 1

Comp. Exam-	Comp. Exam-	Comp. Exam-	Comp. Exam-	Comp. Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-	Exam- Exam-
ple 1	ple 1	ple 2	ple 3	ple 4	ple 1	ple 2	ple 5	ple 3	ple					
Ethylene content (wt. %)	56	56	65	65	56	56	56	56	53	56	bery	.alpha.-Olefin species	Pro-	
Pro- Bu- Bu- Pro- Pro- Pro- Pro- Pro- Pro- poly- pylene pylene tene-1 tene-1 pylene														
ENB ENB ENB ENB ENB ENB ENB (A) Nonconjugated diene content	5.2	10.4	8.2	8.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
(wt. %) Number average mol. wt.	60,000	50,000	40,000	40,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Step Amount Rubbery polymer	100	100	100	100	100	100	100	100	100	100	100	100	100	100
(1) used (A) (parts by wt.) Styrene	20	30	40	36	120	20	5	20	20					
(parts by wt.) Acrylonitrile	0	3	0	4	0	0	0	0	0	0	0	0	0	0
MAH (parts by wt.) 5*.sup.7 Reaction state														
Reaction proceeded in good Granules Good Good --*.sup.5 Good Good slurry state. Graft copolymer stuck with formed was easily collected one another. by filtration Difficulty recoverable Step Amount of styrene added to	16.0	23.2	31.5	30.2	--*.sup.5	16.1	4.3							
--*.sup.6 17.8 15.9 (2) graft copolymer formed (parts by wt.)*.sup.2 Amount of acrylonitrile added	0	2.4	0	3.6	0	0	0	0	0	0	0	0	0	0
to graft copolymer formed (parts by wt.)*.sup.2 Graft copolymer	100	100	100	100	--*.sup.5	100	100	100	100	--*.sup.7	(parts by wt.)*.sup.3	MAH*.sup.4	(parts by wt.)	5
5 5 5 5 2 5 Styrene	5	2.2	*.sup.6	Kneading temperature (.degree.C.)	250	230	260	220	160	250	250	250	Mooney viscosity of modified	
90 82 70 76 --*.sup.5 88 68 63 Unmeas-	88	polymer rubber formed	able (M.sub.1+4											
121.degree. C.) Amount of MAH added to	2.1	1.8	1.6	1.4	0.03	1.8	MAH Unmeas-	Not						
modified polymer rubber 1.3 urable detect-	(parts by wt.)	Styrene	ed	0.8	Amount of gel									
in modified 0.23 0.31 0.13 0.18 0.21 0.18 28	>50	0.16	polymer rubber	(parts by wt.)										

Notes:

*.sup.1 ENB: 5Ethylidene-2-norbornene, DCPD: Dicyclopentadiene *.sup.2 Amount per 100 parts by wt. of rubbery polymer (A) *.sup.3 Polymer recovered in the reaction of step (1) *.sup.4 MAH: Maleic anhydride *.sup.5 Uniform product could not be obtained. The reaction of step (2) could not be performed. *.sup.6 The reaction of step (2) alone was performed with addition of 5 parts by wt. of styrene and 5 parts by wt. of MAH, without performing the reaction of step (1). *.sup.7 MAH was added together with styrene in the reaction of step (1). The reaction of step (2) was omitted.

Detailed Description Paragraph Table (2):

TABLE 2

Example 6 Example 7 Example 8

used in step (2) Allyl glycidyl Acrylamide N-Methylol-	(part by wt.) ether (2)	acrylamide (2) (2) Results of Amount of styrene added	15.3	16.4	15.7	analysis of (part by wt.)*.sup.1 modified Amount of monomer (D) added	0.8	1.1	1.3	polymer (part by wt.)*.sup.1 rubber Mooney viscosity (ML.sub.1+4 121.degree. C.)	86	95	102	Amount of gel (wt. %) 0.26 0.29 0.38

Note:

*.sup.1 Part by wt. per 100 parts by wt. of rubbery polymer (A) as starting material

CLAIMS:

1. A process for preparing a modified polymer rubber comprising the steps of:

(1) graft-polymerizing to a shredded rubbery polymer (A) in an aqueous suspension at a temperature of 30.degree.-130.degree. C. at least one grafting monomer (E) selected from the group consisting of

aromatic vinyl monomers (B) and

vinyl monomers consisting of:

at least one aromatic vinyl monomer (B) and at least one non-aromatic vinyl monomer (C) selected from the group consisting of:

acrylonitrile,

methacrylonitrile,

acrylic acid,

acrylic acid alkyl esters,

methacrylic acid,

methacrylic acid alkyl esters, and

vinyl chloride, the weight ratio of the rubbery polymer (A) to the grafting monomer (E) falling within the range of from 100:5 to 100:100, to obtain a graft polymer, and

(2) kneading the graft copolymer with at least one polymerizable monomer (D) selected for the group consisting of:

unsaturated dicarboxylic acid anhydrides and the derivatives thereof,

unsaturated monocarboxylic acid esters and the derivatives thereof,

unsaturated carboxylic acid amines and the derivatives thereof, and

unsaturated carboxylic acid ethers and the derivatives thereof,

in the presence of a free radical initiator at a temperature of 180.degree.-280.degree. C.

4. The process of claim 3, wherein the step (1) includes the step of selecting at least one member selected from the group consisting of styrene, o-methylstyrene, m-methylstyrene, p-methylstyrene and .alpha.-methylstyrene as the aromatic vinyl monomer (B).

5. The process of claim 1, wherein the step (1) includes the step of selecting styrene as the aromatic vinyl monomer (B).

7. The process of claim 6, wherein the step (1) includes the step of selecting at least one member selected from the group consisting of styrene, o-methylstyrene, m-methylstyrene, p-methylstyrene and .alpha.-methylstyrene as the aromatic vinyl monomer (B).

8. The process of claim 7, wherein the step (1) includes the step of selecting styrene as the aromatic vinyl monomer (B).

9. The process of claim 1, wherein the step (1) includes the step of selecting acrylonitrile as the nonaromatic vinyl monomer (C).

13. A process for preparing a modified polymer rubber comprising the steps of:

(1) graft-polymerizing to a shredded rubbery polymer (A) in an aqueous suspension at a temperature of 30 -130.degree. C. at least one grafting monomer (E) selected from the group consisting of

aromatic vinyl monomers (B) and

vinyl monomers consisting of:

at least one aromatic vinyl monomer (B) and at least one non-aromatic vinyl monomer (C) selected from the group consisting of:

acrylonitrile,

methacrylonitrile,

acrylic acid,

acrylic acid alkyl esters,

methacrylic acid,

methacrylic acid alkyl esters, and

vinyl chloride, the weight ratio of the rubbery polymer (A) to the grafting monomer (E) falling within the range of from 100:5 to 100:100, to obtain a graft polymer, and

(2) kneading the graft copolymer with at least one polymerizable monomer (D) selected from the group consisting of:

maleic anhydride,

allyl glycidyl ether,

acrylamide, and

N-methylol-arylamide, in the presence of a free radical initiator at a temperature of 180.degree.-280.degree. C.

WEST[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 25 of 25 returned.**☐ 1. Document ID: US 6448343 B1

L11: Entry 1 of 25

File: USPT

Sep 10, 2002

US-PAT-NO: 6448343

DOCUMENT-IDENTIFIER: US 6448343 B1

TITLE: Silane vulcanized thermoplastic elastomers

DATE-ISSUED: September 10, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Schombourg; Jacques F.	Commugny			CH
Kraxner; Peter	Geneva			CH
Furrer; Willy	Gingins			CH
Adberrazig; Abdellatif	Meyrin			CH

US-CL-CURRENT: [525/288](#); [525/73](#), [525/74](#), [525/78](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC
Draw Desc	Image										

☐ 2. Document ID: US 6071987 A

L11: Entry 2 of 25

File: USPT

Jun 6, 2000

US-PAT-NO: 6071987

DOCUMENT-IDENTIFIER: US 6071987 A

TITLE: Silicone emulsion composition and process for producing silicone powder therefrom

DATE-ISSUED: June 6, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Matsumoto; Makoto	Tokyo			JP
Takanashi; Masanori	Tokyo			JP

US-CL-CURRENT: [523/209](#); [524/837](#), [524/861](#), [524/862](#), [528/15](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC
Draw Desc	Image										

☐ 3. Document ID: US 5948858 A

L11: Entry 3 of 25

File: USPT

Sep 7, 1999

US-PAT-NO: 5948858

DOCUMENT-IDENTIFIER: US 5948858 A

TITLE: Rubber-modified polymer composition

DATE-ISSUED: September 7, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dorrestijn; Antoon	Born			NL
Koning; Cornelis E.	Schinnen			NL
Bruls; Wilhelmus G. M.	Meerssen			NL

US-CL-CURRENT: 525/66; 524/112

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMIC
Draw Desc	Image										

☐ 4. Document ID: US 5756576 A

L11: Entry 4 of 25

File: USPT

May 26, 1998

US-PAT-NO: 5756576

DOCUMENT-IDENTIFIER: US 5756576 A

TITLE: Rubber-modified polymer composition

DATE-ISSUED: May 26, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bruls; Wilhelmus G. M.	Meerssen			NL
Buntinx; Robbie A. M.	Heerlen			NL
Reid; Valerie M. C.	Maastricht			NL

US-CL-CURRENT: 525/66; 525/64, 525/67, 525/68, 525/70

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMIC
Draw Desc	Image										

☐ 5. Document ID: US 5643997 A

L11: Entry 5 of 25

File: USPT

Jul 1, 1997

US-PAT-NO: 5643997

DOCUMENT-IDENTIFIER: US 5643997 A

TITLE: Polyethylenic resin composition

DATE-ISSUED: July 1, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Matsuoka; Masami	Kawasaki			JP
Aoyagi; Hikaru	Kawasaki			JP

US-CL-CURRENT: 525/71; 525/74, 525/78

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Drawn Desc	Image								

KMC

☐ 6. Document ID: US 5334658 A

L11: Entry 6 of 25

File: USPT

Aug 2, 1994

US-PAT-NO: 5334658

DOCUMENT-IDENTIFIER: US 5334658 A

TITLE: Thermoplastic molding materials

DATE-ISSUED: August 2, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Blumenstein; Uwe	Ludwigshafen			DE
Klaerner; Peter	Battenberg			DE
Schuch; Horst	Ilvesheim			DE
Walter; Hans-Michael	Freinsheim			DE

US-CL-CURRENT: 525/71

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Drawn Desc	Image								

KMC

☐ 7. Document ID: US 5264494 A

L11: Entry 7 of 25

File: USPT

Nov 23, 1993

US-PAT-NO: 5264494

DOCUMENT-IDENTIFIER: US 5264494 A

TITLE: Halogenated butyl rubber graft copolymers

DATE-ISSUED: November 23, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ho; Chai H.	London			CA
Hopkins; William	Sarnia			CA

US-CL-CURRENT: 525/237; 525/232, 525/235, 525/242, 525/244, 525/245, 525/248, 525/250

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Drawn Desc	Image								

KMC

☒ 8. Document ID: US 5189108 A

L11: Entry 8 of 25

File: USPT

Feb 23, 1993

US-PAT-NO: 5189108

DOCUMENT-IDENTIFIER: US 5189108 A

TITLE: Modified polymer rubber and process for preparing the same

DATE-ISSUED: February 23, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Imai; Akio	Ichihara			JP
Tsuji; Mitsuji	Ichihara			JP
Sanada; Takashi	Ichihara			JP
Yamamoto; Keisaku	Ichihara			JP

US-CL-CURRENT: 525/285; 525/260, 525/263, 525/289, 525/296, 525/301, 525/308, 525/310,
525/312, 525/316, 525/317

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K00C

☒ 9. Document ID: US 5093417 A

L11: Entry 9 of 25

File: USPT

Mar 3, 1992

US-PAT-NO: 5093417

DOCUMENT-IDENTIFIER: US 5093417 A

TITLE: Impact-resistant resin

DATE-ISSUED: March 3, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sasaki; Isao	Otake			JP
Yamamoto; Naoki	Otake			JP
Yanagase; Akira	Otake			JP
Ito; Masakazu	Otake			JP

US-CL-CURRENT: 525/63; 525/101, 525/68

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K00C

☐ 10. Document ID: US 4929673 A

L11: Entry 10 of 25

File: USPT

May 29, 1990

US-PAT-NO: 4929673

DOCUMENT-IDENTIFIER: US 4929673 A

TITLE: Polycarbonate/styrenic blends modified with a grafted olefin copolymer

DATE-ISSUED: May 29, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Laughner; Michael K.	Lake Jackson	TX		
Lancaster; Gerald M.	Freeport	TX		
Sun; Yun C.	Midland	MI		

US-CL-CURRENT: 525/63; 525/146, 525/148, 525/92E

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 11. Document ID: US 4404328 A

L11: Entry 11 of 25

File: USPT

Sep 13, 1983

US-PAT-NO: 4404328

DOCUMENT-IDENTIFIER: US 4404328 A

TITLE: Organometallic polymer compositions useful as constituents of anti-fouling paints for marine structures and their methods of manufacture

DATE-ISSUED: September 13, 1983

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dawans; Francois	Bougival			FR
Devaud; Marguerite	Mont St. Aignan			FR
Nicolas; Denise	Maurepas			FR

US-CL-CURRENT: 525/274

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 12. Document ID: US 4389460 A

L11: Entry 12 of 25

File: USPT

Jun 21, 1983

US-PAT-NO: 4389460

DOCUMENT-IDENTIFIER: US 4389460 A

TITLE: Method of protecting submerged articles against fouling

DATE-ISSUED: June 21, 1983

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dawans; Francois	Bougival			FR
Devaud; Marguerite	Mont St Aignan			FR
Nicolas; Denise	Maurepas			FR

US-CL-CURRENT: 428/458; 106/15.05, 106/16, 106/18.35, 428/461, 428/462, 428/463,
428/541, 428/907, 525/310

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 13. Document ID: US 4334039 A

L11: Entry 13 of 25

File: USPT

Jun 8, 1982

US-PAT-NO: 4334039

DOCUMENT-IDENTIFIER: US 4334039 A

TITLE: Process for preparing polymeric polyblends having a rubber phase as particles
with a bimodal particle size distribution

DATE-ISSUED: June 8, 1982

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dupre; Carl R.	Amherst	MA		

US-CL-CURRENT: 525/263; 525/244, 525/260, 525/266, 525/71, 525/76, 525/84

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 14. Document ID: US 4322260 A

L11: Entry 14 of 25

File: USPT

Mar 30, 1982

US-PAT-NO: 4322260

DOCUMENT-IDENTIFIER: US 4322260 A

TITLE: Process for the continuous extrusion forming of a plastic double-walled
foam-core conduit

DATE-ISSUED: March 30, 1982

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Conlon; Lawrence E.	Westfield	MA		

US-CL-CURRENT: 156/244.12; 138/125, 138/126, 156/149, 156/244.13, 156/244.22,
156/244.23, 156/244.24, 264/209.1, 264/45.9, 264/46.1, 264/46.9

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 15. Document ID: US 4315083 A

L11: Entry 15 of 25

File: USPT

Feb 9, 1982

US-PAT-NO: 4315083

DOCUMENT-IDENTIFIER: US 4315083 A

TITLE: Process for the continuous mass polymerization of polyblends

DATE-ISSUED: February 9, 1982

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Burk; Raymond D.	Wilbraham	MA		

US-CL-CURRENT: 525/53; 525/237, 525/316, 525/99

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 16. Document ID: US 4262097 A

L11: Entry 16 of 25

File: USPT

Apr 14, 1981

US-PAT-NO: 4262097

DOCUMENT-IDENTIFIER: US 4262097 A

TITLE: Organometallic polymer compositions useful as constituents of anti-fouling paints for marine structures and their methods of manufacture

DATE-ISSUED: April 14, 1981

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dawans; Francois	Bougival			FR
Devaud; Marguerite	Mont St Aignan			FR
Nicolas; Denise	Maurepas			FR

US-CL-CURRENT: 525/274; 106/15.05, 106/16, 106/18.35, 525/285, 525/310, 525/370, 525/371

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 17. Document ID: US 4221681 A

L11: Entry 17 of 25

File: USPT

Sep 9, 1980

US-PAT-NO: 4221681

DOCUMENT-IDENTIFIER: US 4221681 A

TITLE: Method of forming graft copolymers by attaching pre-polymerized side chains to a natural or unsaturated synthetic rubber backbone, and the resulting graft copolymers

DATE-ISSUED: September 9, 1980

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Campbell; David S.	Welwyn			GB2
Loeber; David E.	Hertford			GB2
Tinker; Andrew J.	Hertford			GB2

US-CL-CURRENT: 525/194; 525/232, 525/376

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 18. Document ID: US 4101702 A

L11: Entry 18 of 25

File: USPT

Jul 18, 1978

US-PAT-NO: 4101702

DOCUMENT-IDENTIFIER: US 4101702 A

TITLE: Composite sheet member having a plurality of coextruded laminar layers

DATE-ISSUED: July 18, 1978

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Churchill; Geoffrey B.	Wilbraham	MA		
White; J. Craig	Feeding Hills	MA		

US-CL-CURRENT: 428/213; 156/244.11, 264/173.12, 264/173.14, 264/173.16, 264/174.1,
428/493, 428/519, 428/520, 428/522, 525/86

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 19. Document ID: US 4097549 A

L11: Entry 19 of 25

File: USPT

Jun 27, 1978

US-PAT-NO: 4097549

DOCUMENT-IDENTIFIER: US 4097549 A

TITLE: Polymer polyblend composition

DATE-ISSUED: June 27, 1978

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruse; Robert L.	Springfield	MA		

US-CL-CURRENT: 525/86; 525/72, 525/75, 525/76, 526/65, 526/68

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 20. Document ID: US 3978161 A

L11: Entry 20 of 25

File: USPT

Aug 31, 1976

US-PAT-NO: 3978161

DOCUMENT-IDENTIFIER: US 3978161 A

TITLE: Metalation of polymers

DATE-ISSUED: August 31, 1976

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nielsen; Stuart D.	Stow	OH		
Hargis; Ivan G.	Tallmadge	OH		
Livigni; Russell A.	Akron	OH		

US-CL-CURRENT: 525/360; 525/332.9, 525/333.2, 525/357, 525/366, 525/375, 526/339, 526/340

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 21. Document ID: US 3898301 A

L11: Entry 21 of 25

File: USPT

Aug 5, 1975

US-PAT-NO: 3898301

DOCUMENT-IDENTIFIER: US 3898301 A

TITLE: Blends of thermoplastic polymers with graft copolymers of maleic acid derivatives

DATE-ISSUED: August 5, 1975

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Konishi; Kunio	Osaka			JA
Tsubakimoto; Tsuneo	Osaka			JA
Nikki; Masao	Osaka			JA

US-CL-CURRENT: 525/77; 524/151, 524/303, 525/286, 525/288, 525/292, 525/293, 525/296, 525/297, 525/301, 525/303, 525/304, 525/305, 525/306, 525/73, 525/74, 525/75, 525/76, 525/78, 525/79, 525/81, 525/82, 526/225, 526/312, 526/318, 526/325, 526/329.2, 526/329.3, 526/342

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☒ 22. Document ID: US 3887653 A

L11: Entry 22 of 25

File: USPT

Jun 3, 1975

US-PAT-NO: 3887653

DOCUMENT-IDENTIFIER: US 3887653 A

TITLE: Process for production of graft copolymers, the substrates of which contain allyl derivatives of maleic acid and maleic acid anhydride

DATE-ISSUED: June 3, 1975

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Konishi; Kunio	Takatsuki			JA
Tsubakimoto; Tsuneo	Toyonaka			JA
Nikki; Masao	Ibaragi			JA

US-CL-CURRENT: 525/301; 524/151, 524/303, 525/293, 525/303, 526/225, 526/271, 526/312,
526/318, 526/325, 526/329.5, 526/342

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 23. Document ID: US 3802950 A

L11: Entry 23 of 25

File: USPT

Apr 9, 1974

US-PAT-NO: 3802950

DOCUMENT-IDENTIFIER: US 3802950 A

TITLE: CELLULAR POLYURETHANE-BITUMEN-PLASTIC COMPOSITE

DATE-ISSUED: April 9, 1974

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stevens; James K.	Brimfield	MA		

US-CL-CURRENT: 428/215; 428/314.4, 428/318.4, 428/319.9, 428/489

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 24. Document ID: US 3627613 A

L11: Entry 24 of 25

File: USPT

Dec 14, 1971

US-PAT-NO: 3627613

DOCUMENT-IDENTIFIER: US 3627613 A

TITLE: CONTINUOUS PROCESS FOR PREPARING COMPOSITES IN SHEET FORM

DATE-ISSUED: December 14, 1971

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Stolki; Thomas J.	Wilbraham	MA		

US-CL-CURRENT: 156/309.6; 156/192, 156/244.25, 156/244.27, 156/273.3, 156/307.7,
156/309.9, 156/322, 156/324, 428/332, 428/462, 428/463, 442/37

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 25. Document ID: US 3625915 A

L11: Entry 25 of 25

File: USPT

Dec 7, 1971

US-PAT-NO: 3625915

DOCUMENT-IDENTIFIER: US 3625915 A

TITLE: ANTISTATIC STYRENE/ACRYLONITRILE-TYPE INTERPOLYMER COMPOSITIONS

DATE-ISSUED: December 7, 1971

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gubler; Michel	Meurchin			FR
Guillon; Joseph	Henin-Lietard			FR

US-CL-CURRENT: 524/244; 260/DIG.15, 260/DIG.17, 260/DIG.19, 524/245, 524/247, 524/249,
524/565, 525/71, 525/75, 525/76, 525/86, 525/87

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	RWD
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Search Results - Record(s) 1 through 54 of 54 returned.☐ 1. Document ID: US 6403683 B1

L9: Entry 1 of 54

File: USPT

Jun 11, 2002

US-PAT-NO: 6403683

DOCUMENT-IDENTIFIER: US 6403683 B1

TITLE: Polycarbonate resin composition and molded article

DATE-ISSUED: June 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kobayashi; Hiroaki	Chiyoda-ku			JP

US-CL-CURRENT: 524/115; 528/196, 528/198

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC
Draw Desc	Image										

☐ 2. Document ID: US 6362282 B1

L9: Entry 2 of 54

File: USPT

Mar 26, 2002

US-PAT-NO: 6362282

DOCUMENT-IDENTIFIER: US 6362282 B1

TITLE: Polymers with high vinyl end segments

DATE-ISSUED: March 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DeDecker; Mark N.	North Canton	OH		

US-CL-CURRENT: 525/271; 525/250, 525/319, 526/136, 526/87

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC
Draw Desc	Image										

☐ 3. Document ID: US 6281297 B1

L9: Entry 3 of 54

File: USPT

Aug 28, 2001

US-PAT-NO: 6281297

DOCUMENT-IDENTIFIER: US 6281297 B1

TITLE: Isobutylene rubber particles, graft copolymer particles and resin composition containing the same

DATE-ISSUED: August 28, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Aoyama; Taizo	Takasago			JP
Kimura; Katsuhiko	Akashi			JP

US-CL-CURRENT: 525/333.7; 524/579, 525/64, 525/66, 525/67, 525/70, 525/78, 526/348.7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC
Draw Desc	Image										

☐ 4. Document ID: US 6201064 B1

L9: Entry 4 of 54

File: USPT

Mar 13, 2001

US-PAT-NO: 6201064

DOCUMENT-IDENTIFIER: US 6201064 B1

TITLE: Crosslinked rubber particles, graft copolymer particles and thermoplastic resin composition

DATE-ISSUED: March 13, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Aoyama; Taizo	Takasago			JP
Kimura; Katsuhiko	Akashi			JP

US-CL-CURRENT: 525/63; 525/100, 525/101, 525/104, 525/106

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw Desc	Image									

☐ 5. Document ID: US 6111012 A

L9: Entry 5 of 54

File: USPT

Aug 29, 2000

US-PAT-NO: 6111012

DOCUMENT-IDENTIFIER: US 6111012 A

TITLE: Polymer compositions for graft copolymer as well as mixtures thereof and thermoplastic compounds containing them

DATE-ISSUED: August 29, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fischer; Michael	Ludwigshafen			DE
Koch; Jurgen	Neuhofen			DE
Rosenau; Bernhard	Neustadt			DE
Mc Kee; Graham Edmund	Neustadt			DE
Grabowski; Sven	Ludwigshafen			DE
Mosbach; Norbert	Maxdorf			DE
Fischer; Wolfgang	Ludwigshafen			DE
Heckmann; Walter	Weinheim			DE

US-CL-CURRENT: 525/64; 525/143, 525/316, 525/67

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 6. Document ID: US 6103830 A

L9: Entry 6 of 54

File: USPT

Aug 15, 2000

US-PAT-NO: 6103830

DOCUMENT-IDENTIFIER: US 6103830 A

TITLE: Impact resistant methacrylic resin containing a partially hydrogenated, conjugated diene polymer

DATE-ISSUED: August 15, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hirota; Satoru	Yokohama			JP
Sasagawa; Masahiro	Yokohama			JP
Kinoshita; Hideo	Yokohama			JP

US-CL-CURRENT: 525/310; 526/201, 526/328.5

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 7. Document ID: US 6066693 A

L9: Entry 7 of 54

File: USPT

May 23, 2000

US-PAT-NO: 6066693

DOCUMENT-IDENTIFIER: US 6066693 A

TITLE: Polymer composition for graft copolymers as well as mixtures thereof and thermoplastic compounds containing them

DATE-ISSUED: May 23, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fischer; Michael	Ludwigshafen			DE
Rosenau; Bernhard	Neustadt			DE
Fischer; Wolfgang	Ludwigshafen			DE

US-CL-CURRENT: 525/67; 525/143, 525/302, 525/316, 525/64

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 8. Document ID: US 5959033 A

L9: Entry 8 of 54

File: USPT

Sep 28, 1999

US-PAT-NO: 5959033

DOCUMENT-IDENTIFIER: US 5959033 A

TITLE: Polymers containing highly grafted rubbers

DATE-ISSUED: September 28, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Demirors; Mehmet	Midland	MI		
Priddy; Duane B.	Midland	MI		
Hermans; Nicolaas M. A.	Terneuzen			NL
Veraart; Rudi H. E.	Terneuzen			NL
Heuvelsland; Albert J.	Heikant			NL
Sikkema; Kevin D.	Midland	MI		

US-CL-CURRENT: 525/86; 525/316, 525/70

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 9. Document ID: US 5834563 A

L9: Entry 9 of 54

File: USPT

Nov 10, 1998

US-PAT-NO: 5834563

DOCUMENT-IDENTIFIER: US 5834563 A

TITLE: Composite rubber particles and graft copolymer particles of composite rubber

DATE-ISSUED: November 10, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kimura; Katsuhiko	Akashi			JP
Aoyama; Taizo	Takasago			JP

US-CL-CURRENT: 525/319; 525/191, 525/227, 525/241, 525/310

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K00C

☐ 10. Document ID: US 5674930 A

L9: Entry 10 of 54

File: USPT

Oct 7, 1997

US-PAT-NO: 5674930

DOCUMENT-IDENTIFIER: US 5674930 A

TITLE: Thermoplastic resin compositions

DATE-ISSUED: October 7, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sugiura; Motoyuki	Aichi			JP
Ohara; Kazumine	Aichi			JP

US-CL-CURRENT: 524/404; 524/423, 524/428, 524/431, 524/441, 524/445, 524/449, 524/451,
524/452, 524/504, 525/64, 525/66, 525/67, 525/68, 525/71, 525/78, 525/79, 525/80,
525/85, 525/86

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K00C

☐ 11. Document ID: US 5569709 A

L9: Entry 11 of 54

File: USPT

Oct 29, 1996

US-PAT-NO: 5569709

DOCUMENT-IDENTIFIER: US 5569709 A

TITLE: Grafting, phase-inversion and cross-linking controlled multi-stage bulk process for making ABS graft copolymers

DATE-ISSUED: October 29, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sue; Chen-Youn	Williamstown	WV		
Koch; Robert	Parkersburg	WV		
Pace; John E.	Washington	WV		
Prince; Gregory R.	Sandyville	WV		

US-CL-CURRENT: 525/52; 525/316, 525/53, 525/86

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K00C

☐ 12. Document ID: US 5414045 A

L9: Entry 12 of 54

File: USPT

May 9, 1995

US-PAT-NO: 5414045
DOCUMENT-IDENTIFIER: US 5414045 A

TITLE: Grafting, phase-inversion and cross-linking controlled multi-stage bulk process for making ABS graft copolymers

DATE-ISSUED: May 9, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sue; Chen-Youn	Williamstown	WV		
Koch; Robert	Parkersburg	WV		
Pace; John E.	Washington	WV		
Prince; Gregory R.	Sandyville	WV		

US-CL-CURRENT: 525/86; 525/314, 525/316, 525/52, 525/53

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K00C

☐ 13. Document ID: US 5314964 A

L9: Entry 13 of 54

File: USPT

May 24, 1994

US-PAT-NO: 5314964
DOCUMENT-IDENTIFIER: US 5314964 A

TITLE: Low temperature process for the preparation of isopropenyl-alpha, alpha-dimethylbenzyl isocyanate--grafted latexes

DATE-ISSUED: May 24, 1994

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lucas; Howard R.	Danbury	CT		

US-CL-CURRENT: 525/293; 524/458, 524/507, 525/173, 525/278, 525/69, 525/77, 526/223, 526/310

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

K00C

☐ 14. Document ID: US 5270375 A

L9: Entry 14 of 54

File: USPT

Dec 14, 1993

US-PAT-NO: 5270375
DOCUMENT-IDENTIFIER: US 5270375 A

TITLE: Polyarylene sulfide resin

DATE-ISSUED: December 14, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Yamamoto; Naoki	Hiroshima			JP
Yanagase; Akira	Otake			JP
Mori; Hiroshi	Hiroshima			JP
Nakata; Akira	Otake			JP

US-CL-CURRENT: 524/500; 524/492, 524/495, 525/474, 525/479, 525/537

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 15. Document ID: US 5231137 A

L9: Entry 15 of 54

File: USPT

Jul 27, 1993

US-PAT-NO: 5231137

DOCUMENT-IDENTIFIER: US 5231137 A

TITLE: Isopropenyl-alpha,alpha-dimethylbenzyl isocyanate - grafted polymers

DATE-ISSUED: July 27, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fisher; Michael M.	Ridgefield	CT		
White; Leroy A.	Somers	CT		
Lucas; Howard R.	Danbury	CT		

US-CL-CURRENT: 525/176; 525/177, 525/179, 525/223, 525/293, 525/69, 525/70, 528/75

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KMC

☐ 16. Document ID: US 5227428 A

L9: Entry 16 of 54

File: USPT

Jul 13, 1993

US-PAT-NO: 5227428

DOCUMENT-IDENTIFIER: US 5227428 A

TITLE: Rubber modified nylon composition

DATE-ISSUED: July 13, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lavengood; Richard E.	Longmeadow	MA		
Padwa; Allen R.	Worcester	MA		
Harris; Alva F.	Wilbraham	MA		

US-CL-CURRENT: 525/66; 525/179

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 17. Document ID: US 5189108 A

L9: Entry 17 of 54

File: USPT

Feb 23, 1993

US-PAT-NO: 5189108

DOCUMENT-IDENTIFIER: US 5189108 A

TITLE: Modified polymer rubber and process for preparing the same

DATE-ISSUED: February 23, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Imai; Akio	Ichihara			JP
Tsuji; Mitsuji	Ichihara			JP
Sanada; Takashi	Ichihara			JP
Yamamoto; Keisaku	Ichihara			JP

US-CL-CURRENT: 525/285; 525/260, 525/263, 525/289, 525/296, 525/301, 525/308, 525/310,
525/312, 525/316, 525/317

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 18. Document ID: US 5180777 A

L9: Entry 18 of 54

File: USPT

Jan 19, 1993

US-PAT-NO: 5180777

DOCUMENT-IDENTIFIER: US 5180777 A

TITLE: Rubber-modified nylon composition

DATE-ISSUED: January 19, 1993

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Padwa; Allen R.	Worcester	MA		
Lavengood; Richard E.	Longmeadow	MA		
Patel; Raman	Akron	OH		

US-CL-CURRENT: 525/66; 525/179

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 19. Document ID: US 5164453 A

L9: Entry 19 of 54

File: USPT

Nov 17, 1992

US-PAT-NO: 5164453

DOCUMENT-IDENTIFIER: US 5164453 A

TITLE: Isopropenyl-alpha, alpha-dimethylbenzyl isocyanate--grafted polymers

DATE-ISSUED: November 17, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fisher; Michael M.	Ridgefield	CT		
White; Leroy A.	Somers	CT		
Lucas; Howard R.	Danbury	CT		

US-CL-CURRENT: 525/293; 525/69, 525/70

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 20. Document ID: US 5162419 A

L9: Entry 20 of 54

File: USPT

Nov 10, 1992

US-PAT-NO: 5162419

DOCUMENT-IDENTIFIER: US 5162419 A

TITLE: Low gloss talc filled ABS/PC

DATE-ISSUED: November 10, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Pottier-Metz; Catherine M. M.	Beauvais			FR
Erpelding; Michel	St. Maxim			FR

US-CL-CURRENT: 524/451; 525/67

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 21. Document ID: US 5130394 A

L9: Entry 21 of 54

File: USPT

Jul 14, 1992

US-PAT-NO: 5130394

DOCUMENT-IDENTIFIER: US 5130394 A

TITLE: Starch graft polymers

DATE-ISSUED: July 14, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nguyen; Charles C.	Cedar Rapids	IA		
Martin; Verne J.	Cedar Rapids	IA		
Pauley; Edward P.	Jesup	IA		

US-CL-CURRENT: [527/300](#); [527/303](#), [527/313](#), [527/314](#), [527/315](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 22. Document ID: US 5106908 A

L9: Entry 22 of 54

File: USPT

Apr 21, 1992

US-PAT-NO: 5106908

DOCUMENT-IDENTIFIER: US 5106908 A

TITLE: Polyorganosiloxane/polyvinyl-based graft (meth)acrylate polymers

DATE-ISSUED: April 21, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Alsmarraie; Muhanad A.	Clifton Park	NY		
Hobbs; Stanley Y.	Scotia	NY		
Wang; I-chung W.	Williamstown	MA		
Watkins; Vicki H.	Alplaus	NY		

US-CL-CURRENT: [525/105](#); [525/100](#), [525/104](#), [525/479](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 23. Document ID: US 5089557 A

L9: Entry 23 of 54

File: USPT

Feb 18, 1992

US-PAT-NO: 5089557

DOCUMENT-IDENTIFIER: US 5089557 A

TITLE: Rubber modified blend of nylon and styrene/acrylonitrile maleic anhydride terpolymer

DATE-ISSUED: February 18, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Henton; David E.	Midland	MI		
Mang; Michael N.	Midland	MI		

US-CL-CURRENT: [525/66](#); [525/179](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 24. Document ID: US 5087662 A

L9: Entry 24 of 54

File: USPT

Feb 11, 1992

US-PAT-NO: 5087662
DOCUMENT-IDENTIFIER: US 5087662 A

TITLE: Polyester, polycarbonate and/or polyphenylene ether with
polyorganosiloxane/polyvinyl-based graft (meth) acrylate polymers

DATE-ISSUED: February 11, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Alsmarraie; Muhanad A.	Clifton Park	NY		
Hobbs; Stanley Y.	Scotia	NY		
Wang; I-Chung W.	Williamstown	MA		
Watkins; Vicki H.	Alplaus	NY		

US-CL-CURRENT: 525/63; 525/100, 525/104, 525/105, 525/391, 525/392, 525/393, 525/394,
525/439, 525/445, 525/446, 525/464 , 525/474

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWIC

☐ 25. Document ID: US 5079293 A

L9: Entry 25 of 54

File: USPT

Jan 7, 1992

US-PAT-NO: 5079293
DOCUMENT-IDENTIFIER: US 5079293 A

TITLE: Thermoplastic compositions containing combined modifiers

DATE-ISSUED: January 7, 1992

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Alsamarraie; Muhanad A.	Parkersburgh			WV
Hobbs; Stanley Y.	Schenectady	NY		
Wang; I-Chung W.	Vienna	WV		
DeRudder; James L.	Mt. Vernon	IN		
Watkins; Vicki H.	Schenectady	NY		
Dekkers; Marinus E. J.	Schenectady	NY		

US-CL-CURRENT: 525/66; 525/100, 525/105, 525/106, 525/393, 525/421, 525/422, 525/439,
525/440, 525/445, 525/464, 525/479 , 525/63, 525/67, 525/68, 525/902

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWIC

☐ 26. Document ID: US 5045595 A

L9: Entry 26 of 54

File: USPT

Sep 3, 1991

US-PAT-NO: 5045595
DOCUMENT-IDENTIFIER: US 5045595 A

TITLE: Polyorganosiloxane/polyvinyl-based graft polymers, process and thermoplastic compositions containing the same

DATE-ISSUED: September 3, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wang; I-Chung W.	Williamstown	MA		

US-CL-CURRENT: 525/66; 525/100, 525/104, 525/105, 525/421, 525/439, 525/440, 525/445, 525/464, 525/474, 525/479, 525/63 , 525/67, 525/68, 525/72

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 27. Document ID: US 5025066 A

L9: Entry 27 of 54

File: USPT

Jun 18, 1991

US-PAT-NO: 5025066

DOCUMENT-IDENTIFIER: US 5025066 A

TITLE: Polycarbonate and polyester blends modified with polyorganosiloxane graft polymers combined with diene rubber-based graft polymers

DATE-ISSUED: June 18, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DeRudder; James L.	Mt. Vernon	IN		
Wang; I-Chung W.	Williamstown	MA		

US-CL-CURRENT: 525/66; 525/100, 525/104, 525/105, 525/421, 525/422, 525/439, 525/440, 525/445, 525/464, 525/479, 525/63 , 525/67, 525/902

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 28. Document ID: US 5003022 A

L9: Entry 28 of 54

File: USPT

Mar 26, 1991

US-PAT-NO: 5003022

DOCUMENT-IDENTIFIER: US 5003022 A

TITLE: Starch graft polymers

DATE-ISSUED: March 26, 1991

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nguyen; Charles C.	Cedar Rapids	IA		
Martin; Verne J.	Cedar Rapids	IA		
Pauley; Edward P.	Jesup	IA		

US-CL-CURRENT: 527/300; 428/511, 428/512, 428/532, 428/535, 527/303, 527/313, 527/314,
527/315

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 29. Document ID: US 4929673 A

L9: Entry 29 of 54

File: USPT

May 29, 1990

US-PAT-NO: 4929673

DOCUMENT-IDENTIFIER: US 4929673 A

TITLE: Polycarbonate/styrenic blends modified with a grafted olefin copolymer

DATE-ISSUED: May 29, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Laughner; Michael K.	Lake Jackson	TX		
Lancaster; Gerald M.	Freeport	TX		
Sun; Yun C.	Midland	MI		

US-CL-CURRENT: 525/63; 525/146, 525/148, 525/92E

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 30. Document ID: US 4902742 A

L9: Entry 30 of 54

File: USPT

Feb 20, 1990

US-PAT-NO: 4902742

DOCUMENT-IDENTIFIER: US 4902742 A

TITLE: Thermoplastic polymethacrylimide resin composition

DATE-ISSUED: February 20, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Yamamoto; Naoki	Hiroshima			JP
Nishida; Kozi	Otake			JP
Yanagase; Akira	Otake			JP

US-CL-CURRENT: 525/63

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KVMC

☐ 31. Document ID: US 4898965 A

L9: Entry 31 of 54

File: USPT

Feb 6, 1990

US-PAT-NO: 4898965
DOCUMENT-IDENTIFIER: US 4898965 A
TITLE: Additives for synthetic resins
DATE-ISSUED: February 6, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kinoshita; Mitsuo	Aichi			JP
Imamura; Shigeru	Aichi			JP
Matsueda; Hirokazu	Aichi			JP

US-CL-CURRENT: 558/416, 558/302, 558/399, 558/406, 558/414, 558/442, 560/196, 560/198,
560/199, 560/88, 560/90, 560/91

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 32. Document ID: US 4898964 A

L9: Entry 32 of 54

File: USPT

Feb 6, 1990

US-PAT-NO: 4898964
DOCUMENT-IDENTIFIER: US 4898964 A
TITLE: Additives for synthetic resins
DATE-ISSUED: February 6, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kinoshita; Mitsuo	Aichi			JP
Imamura; Shigeru	Toyokawa			JP
Matsueda; Hirokazu	Toyohashi			JP

US-CL-CURRENT: 558/416, 558/302, 558/399, 558/406, 558/414, 558/442, 560/128, 560/196,
560/198, 560/199, 560/88, 560/89, 560/90, 560/91

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 33. Document ID: US 4892900 A

L9: Entry 33 of 54

File: USPT

Jan 9, 1990

US-PAT-NO: 4892900
DOCUMENT-IDENTIFIER: US 4892900 A
TITLE: Polyphenylene ether resin composition
DATE-ISSUED: January 9, 1990

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sasaki; Isao	Hiroshima			JP
Yamamoto; Naoki	Hiroshima			JP
Yanagase; Akira	Otake			JP

US-CL-CURRENT: 524/141; 524/409, 524/504, 525/133, 525/63

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 34. Document ID: US 4879347 A

L9: Entry 34 of 54

File: USPT

Nov 7, 1989

US-PAT-NO: 4879347

DOCUMENT-IDENTIFIER: US 4879347 A

TITLE: Graft polymerization preformer and method of manufacturing the same

DATE-ISSUED: November 7, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Moriya; Yasuo	Aichi			JP
Suzuki; Nobuyoshi	Aichi			JP
Goto; Hiroshi	Aichi			JP

US-CL-CURRENT: 525/263; 525/277, 525/286, 525/303

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 35. Document ID: US 4877841 A

L9: Entry 35 of 54

File: USPT

Oct 31, 1989

US-PAT-NO: 4877841

DOCUMENT-IDENTIFIER: US 4877841 A

TITLE: Graft polymerization preformer and method of manufacturing the same

DATE-ISSUED: October 31, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Moriya; Yasuo	Aichi			JP
Suzuki; Nobuyoshi	Aichi			JP
Goto; Hiroshi	Aichi			JP

US-CL-CURRENT: 525/286; 525/263, 525/277, 525/303, 525/80, 525/913

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments
Draw Desc	Image								

KWC

☐ 36. Document ID: US 4839432 A

L9: Entry 36 of 54

File: USPT

Jun 13, 1989

US-PAT-NO: 4839432

DOCUMENT-IDENTIFIER: US 4839432 A

TITLE: Method of manufacturing a grafted resin composition

DATE-ISSUED: June 13, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Moriya; Yasuo	Chita			JP
Suzuki; Nobuyoshi	Chita			JP
Goto; Hiroshi	Chita			JP

US-CL-CURRENT: 525/303; 525/243, 525/263

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw Desc	Image									

☐ 37. Document ID: US 4777211 A

L9: Entry 37 of 54

File: USPT

Oct 11, 1988

US-PAT-NO: 4777211

DOCUMENT-IDENTIFIER: US 4777211 A

TITLE: Rubber-modified nylon composition

DATE-ISSUED: October 11, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lavengood; Richard E.	Longmeadow	MA		
Patel; Raman	Akron	OH		
Padwa; Allen R.	Worcester	MA		

US-CL-CURRENT: 525/66; 525/179, 525/902

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWC
Draw Desc	Image									

☐ 38. Document ID: US 4753988 A

L9: Entry 38 of 54

File: USPT

Jun 28, 1988

US-PAT-NO: 4753988

DOCUMENT-IDENTIFIER: US 4753988 A

TITLE: High gloss acrylate rubber-modified weatherable resins

DATE-ISSUED: June 28, 1988

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Henton; David E.	Midland	MI		
Anthony; Edward B.	Dalton	GA		

US-CL-CURRENT: 525/73; 525/193, 525/228, 525/71, 525/74, 525/75, 525/81, 525/85

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 39. Document ID: US 4713415 A

L9: Entry 39 of 54

File: USPT

Dec 15, 1987

US-PAT-NO: 4713415

DOCUMENT-IDENTIFIER: US 4713415 A

TITLE: Rubber modified nylon composition

DATE-ISSUED: December 15, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lavengood; Richard E.	Longmeadow	MA		
Padwa; Allen R.	Worcester	MA		
Harris; Alva F.	Wilbraham	MA		

US-CL-CURRENT: 525/66; 525/183

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 40. Document ID: US 4690986 A

L9: Entry 40 of 54

File: USPT

Sep 1, 1987

US-PAT-NO: 4690986

DOCUMENT-IDENTIFIER: US 4690986 A

TITLE: Impact-resistant thermoplastic polyorganosiloxane-based graft copolymer and process for producing same

DATE-ISSUED: September 1, 1987

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sasaki; Isao	Hiroshima			JP
Yanagase; Akira	Otake			JP
Kawachi; Yasunori	Otake			JP
Mayuzumi; Tetsuya	Kawagoe			JP
Oba; Toshio	Annaka			JP
Okada; Fumio	Takasaki			JP

US-CL-CURRENT: 525/479; 528/32

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 41. Document ID: US 4485212 A

L9: Entry 41 of 54

File: USPT

Nov 27, 1984

US-PAT-NO: 4485212

DOCUMENT-IDENTIFIER: US 4485212 A

TITLE: Impact resistant blend of polybutylene terephthalate resin and OSA graft copolymer

DATE-ISSUED: November 27, 1984

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wefer; John M.	Newtown	CT		

US-CL-CURRENT: 525/64; 525/289, 525/313

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 42. Document ID: US 4444841 A

L9: Entry 42 of 54

File: USPT

Apr 24, 1984

US-PAT-NO: 4444841

DOCUMENT-IDENTIFIER: US 4444841 A

TITLE: Extruded AES film

DATE-ISSUED: April 24, 1984

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wheeler; Robert D.	Fairfield	CT		

US-CL-CURRENT: 428/339; 428/462, 428/463, 428/496, 428/507, 428/521

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 43. Document ID: US 4444840 A

L9: Entry 43 of 54

File: USPT

Apr 24, 1984

US-PAT-NO: 4444840

DOCUMENT-IDENTIFIER: US 4444840 A

TITLE: Calendered AES film

DATE-ISSUED: April 24, 1984

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wefer; John M.	Newtown	CT		

US-CL-CURRENT: 428/339; 428/493, 428/521, 428/522

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KVMC
Draw Desc	Image									

☐ 44. Document ID: US 4440825 A

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File: USPT

Apr 3, 1984

US-PAT-NO: 4440825

DOCUMENT-IDENTIFIER: US 4440825 A

TITLE: Laminate with skin based on AES graft copolymer

DATE-ISSUED: April 3, 1984

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Paddock; Charles F.	Southbury	CT		

US-CL-CURRENT: 428/318.6; 428/318.4, 428/318.8, 428/319.7, 428/521, 525/70, 525/75

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KVMC
Draw Desc	Image									

☐ 45. Document ID: US 4438171 A

L9: Entry 45 of 54

File: USPT

Mar 20, 1984

US-PAT-NO: 4438171

DOCUMENT-IDENTIFIER: US 4438171 A

TITLE: Coextruded product of AES-thermoplastic graft copolymer

DATE-ISSUED: March 20, 1984

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wefer; John M.	Newtown	CT		

US-CL-CURRENT: 428/215; 156/244.11, 428/216, 428/220, 428/517, 428/519, 428/521

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KVMC
Draw Desc	Image									

☐ 46. Document ID: US 4346199 A

L9: Entry 46 of 54

File: USPT

Aug 24, 1982

US-PAT-NO: 4346199

DOCUMENT-IDENTIFIER: US 4346199 A

TITLE: Process for a polymeric polyblend composition comprising a matrix phase terpolymer of alkenyl aromatic alkenyl nitrile and myrcene monomers and a diene rubber phase grafted with said monomers

DATE-ISSUED: August 24, 1982

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Peng; Fred M.	Longmeadow	MA		
Tokas; Edward F.	Kirkwood	MO		

US-CL-CURRENT: 525/316; 525/288, 525/292, 525/295

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMOC
Draw Desc	Image									

☐ 47. Document ID: US 4268638 A

L9: Entry 47 of 54

File: USPT

May 19, 1981

US-PAT-NO: 4268638

DOCUMENT-IDENTIFIER: US 4268638 A

TITLE: Process for the preparation of rubber-modified thermoplastic resins

DATE-ISSUED: May 19, 1981

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Shimokawa; Shin-ichi	Yokkaichi			JP
Yamamoto; Yuji	Suzuka			JP
Nagai; Hisao	Yokkaichi			JP

US-CL-CURRENT: 525/263; 525/264, 525/289, 525/316

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMOC
Draw Desc	Image									

☐ 48. Document ID: US 4221681 A

L9: Entry 48 of 54

File: USPT

Sep 9, 1980

US-PAT-NO: 4221681

DOCUMENT-IDENTIFIER: US 4221681 A

TITLE: Method of forming graft copolymers by attaching pre-polymerized side chains to a natural or unsaturated synthetic rubber backbone, and the resulting graft copolymers

DATE-ISSUED: September 9, 1980

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Campbell; David S.	Welwyn			GB2
Loeber; David E.	Hertford			GB2
Tinker; Andrew J.	Hertford			GB2

US-CL-CURRENT: 525/194; 525/232, 525/376

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 49. Document ID: US 4185049 A

L9: Entry 49 of 54

File: USPT

Jan 22, 1980

US-PAT-NO: 4185049

DOCUMENT-IDENTIFIER: US 4185049 A

TITLE: Mass polymerization process for polyblends

DATE-ISSUED: January 22, 1980

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kruse; Robert L.	Springfield	MA		
Peng; Fred M.	Longmeadow	MA		

US-CL-CURRENT: 525/84

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 50. Document ID: US 4134927 A

L9: Entry 50 of 54

File: USPT

Jan 16, 1979

US-PAT-NO: 4134927

DOCUMENT-IDENTIFIER: US 4134927 A

TITLE: Production of thermoplastic olefin elastomers

DATE-ISSUED: January 16, 1979

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Tomoshige; Toru	Ohtake			JP
Nagano; Riichiro	Waki			JP
Imamura; Tetsuo	Iwakuni			JP

US-CL-CURRENT: 525/245; 525/247, 525/253, 525/263, 525/265, 525/285, 525/301, 525/386

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 51. Document ID: US 3919355 A

L9: Entry 51 of 54

File: USPT

Nov 11, 1975

US-PAT-NO: 3919355

DOCUMENT-IDENTIFIER: US 3919355 A

TITLE: Method for preparing shock-resistant grafted copolymers of styrene or vinyltoluene with synthetic rubber

DATE-ISSUED: November 11, 1975

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Ballova; Galina Dmitrievna	Leningrad			SU
Egorova; Ekaterina Ivanovna	Leningrad			SU
Sivograkova; Klavdiya Andreevna	Leningrad			SU
Bezborodko; Georgy Lazarevich	Leningrad			SU
Lebedeva; Mariya Moiseevna	Leningrad			SU
Rusinovskaya; Irina Ivanovna	Leningradskya oblast			SU
Maladzyanova; Larisa Fedorovna	Leningrad			SU
Maximov; Vladimir Nikolaevich	Leningrad			SU
Ostrovskaya; Tamara Nikolaevna	Leningrad			SU

US-CL-CURRENT: 525/255; 525/261, 525/316

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
Draw Desc	Image									

☐ 52. Document ID: US 3909463 A

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File: USPT

Sep 30, 1975

US-PAT-NO: 3909463

DOCUMENT-IDENTIFIER: US 3909463 A

TITLE: Grafted block copolymers of synthetic rubbers and polyolefins

DATE-ISSUED: September 30, 1975

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hartman; Paul F.	Wayne	NJ		

US-CL-CURRENT: 521/136; 521/139, 521/140, 521/81, 521/88, 525/133, 525/136, 525/138, 525/139, 525/145

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KWIC
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☐ 53. Document ID: US 3898301 A

L9: Entry 53 of 54

File: USPT

Aug 5, 1975

US-PAT-NO: 3898301
DOCUMENT-IDENTIFIER: US 3898301 A

TITLE: Blends of thermoplastic polymers with graft copolymers of maleic acid derivatives

DATE-ISSUED: August 5, 1975

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Konishi; Kunio	Osaka			JA
Tsubakimoto; Tsuneo	Osaka			JA
Nikki; Masao	Osaka			JA

US-CL-CURRENT: 525/77, 524/151, 524/303, 525/286, 525/288, 525/292, 525/293, 525/296,
525/297, 525/301, 525/303, 525/304, 525/305, 525/306, 525/73, 525/74, 525/75, 525/76,
525/78, 525/79, 525/81, 525/82, 526/225, 526/312, 526/318, 526/325, 526/329.2,
526/329.3, 526/342

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMIC
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☐ 54. Document ID: US 3887653 A

L9: Entry 54 of 54

File: USPT

Jun 3, 1975

US-PAT-NO: 3887653
DOCUMENT-IDENTIFIER: US 3887653 A

TITLE: Process for production of graft copolymers, the substrates of which contain allyl derivatives of maleic acid and maleic acid anhydride

DATE-ISSUED: June 3, 1975

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Konishi; Kunio	Takatsuki			JA
Tsubakimoto; Tsuneo	Toyonaka			JA
Nikki; Masao	Ibaragi			JA

US-CL-CURRENT: 525/301, 524/151, 524/303, 525/293, 525/303, 526/225, 526/271, 526/312,
526/318, 526/325, 526/329.5, 526/342

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	KMIC
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